

[illegible]

- B_2

1 5. A system for controlling intake air of an internal
2 combustion engine, the engine having at least one combustion
3 chamber provided with intake means together with an intake
4 manifold provided with a throttle valve, wherein the opening and
5 closure timings of the intake means are adjustable entirely
6 independently from the crankshaft position to control the
7 amount of intake air supplied to the combustion chamber, the
8 method comprising:
9 a control for a response adjustment to variable valve
10 timing control of the intake means for unthrottled intake air
11 control.

6. A system for controlling intake air of an internal combustion engine, the engine having at least one combustion chamber, the system comprising:

- at least one intake valve provided for the combustion chamber;
- an electromagnetic driver operatively connected to each intake valve for opening said intake valve;
- an intake manifold with a throttle valve communicating with each intake valve; and
- sensors providing operation variables indicative of operator torque request command and engine speed;

12 a control unit receiving said operation variables to
13 determine a first operation parameter indicative of target intake
14 air based on said operator torque request command and said
15 engine speed,

16 said control unit being operative to make a selection based
17 on said first operation parameter indicative of target intake air
18 between a first operation range for unthrottled intake air control
19 and a second operation range for throttled intake air control,
20 said first and second operation range being separated from each
21 other by a threshold value of target intake air at each of varying
22 values of engine speed, said threshold value increases as engine
23 speed increases,

24 said control unit being operative to vary, with valve
25 opening timing held in the neighborhood of the top dead center,
26 valve closure timing of said intake valve with said throttle valve
27 held in the neighborhood of the wide open throttle position to
28 perform throttled intake air control upon selection of said first
29 operation range, and vary throttle valve position of said throttle
30 valve with valve timing of said intake valve held to provide a
31 valve opening duration in the neighborhood of the minimum
32 valve opening duration that is variable with varying engine
33 speed,

34 *said control unit being operative to determine a second*
35 *operation parameter indicative of a target valve closure timing*
36 *of said intake valve based on said target intake air,*

37 said control unit being operative to provide a response
38 adjustment to said second operation parameter indicative of
39 said target closure timing to give a processed second operation
40 parameter, and

41 said control unit being operative to control said
42 electromagnetic driver to cause said intake valve to close at
43 valve closure timing indicated by said processed second
44 operation parameter.

[illegible]

17 *varying the valve closure timing of the intake means to*
18 *close the intake means at a valve closure timing indicated by*
19 *said processed second operation variable.*

12 *instructions for determining a second operation parameter*
13 *indicative of a preliminary valve closure timing for unthrottled*

1. From the above, we can see that the above-mentioned
 \mathcal{H} is a Hilbert space.

add

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